



An examination of how the effort-inducing property of incentive compensation influences performance in multidimensional tasks

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ABSTRACT

Employees often find themselves working in organizations where their jobs have multiple dimensions. An often proposed solution to motivating employees in multidimensional environments is for organizations to use incentive compensation. Incentive compensation can both direct employees' attention (attention-directing property) and motivate their effort levels (effort-inducing property) but incentive compensation might not always be optimal in multi-dimensional settings. Thus, it is important to better understand the two proposed properties of incentive compensation through which incentive compensation motivates employee performance. Conducting an experiment in a multidimensional environment that contains quantity and quality task dimensions, we find that the incremental effectiveness of the effort-inducing property over the attention-directing property on performance quantity and performance quality varies depending on the task dimension toward which attention is directed and effort is induced. Specifically, the effort-inducing property has a positive incremental effect over the attention-directing property on performance quality when the quality dimension is incentivized; however, the effort-inducing property does not have a positive incremental effect over the attention-directing property on performance quantity when the quantity dimension is incentivized. This study provides important insight regarding the properties of incentive compensation.

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1. Introduction

Employees often find themselves working in organizations where their jobs have multiple dimensions. Such environments may be due to the inherently multidimensional nature of a single task or due to the organizations explicitly choosing to group multiple, separate tasks under a single job responsibility in order to leverage synergies across those tasks (Lindbeck and Snower, 2000). A key feature of multidimensional environments is that effort expended towards one dimension cannot be simultaneously expended towards other dimensions of the task (Hannan et al., 2013). Therefore, employees must not only decide how much effort to expend but the amount of effort to expend along each dimension. Cognitive load theory suggests that effort spent trying to figure out where to direct their effort leaves less effort available to actually devote toward the task dimensions themselves (Sweller, 1988). Psychology research studying how individuals make tradeoffs finds

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that individuals often take a hierarchical approach, prioritizing one task dimension over the other (Payne et al., 1993). A potential issue with this approach is that an employee might prioritize a task dimension inconsistent with the dimension that the organization wishes to prioritize. However, employers can intervene and provide cues to help employees prioritize the desired task dimension. Accordingly, in order to best achieve the organization's objectives, an organization not only needs to consider how to motivate employees' effort levels but also how to motivate employees to allocate their effort toward each specific task dimension.

An often proposed solution for organizations to motivate employees, including in multidimensional environments, is to use incentive compensation. Although incentive compensation might not always be optimal, it has potential usefulness because, as Holmstrom and Milgrom (1991) identified in their multitask principal-agent model, incentive pay possesses two properties. First, as in a single dimensional task, incentive compensation can act to invoke greater effort from the employees (the effort-inducing property). Second, unique to a multidimensional task environment, incentive compensation can act to direct employees on where to expend their effort (the attention-directing property). For example, if an incentive contract weighs a certain task dimension more than another dimension employees are likely to direct their attention to that specific task dimension. Meanwhile, the payoff parameters of the incentive contract serve to motivate an appropriate level of effort in that desired direction. Utilizing a multidimensional environment that contains quantity and quality task dimensions, we investigate the incremental effectiveness on performance of the effort-inducing property above assumed benefits of the attention-directing property, including whether any incremental effectiveness of the effort-inducing property varies depending on the task dimension toward which attention is directed and effort is induced.

Our study provides important insight regarding how to efficiently design employment contracts that better leverage the particular incentive compensation property(ies) that is (are) most effective for the task dimension the organization wants to emphasize. Prior research has tended to study either the overall effect of incentive compensation design on effort and performance (see Garbers and Konradt, 2014 and Jenkins et al., 1998 for reviews of this research) or to identify settings whereby fixed wages might be preferred to incentive compensation (e.g., Holmstrom and Milgrom, 1991). However, it is unknown once employees' attention has been directed to a specific task dimension, what the incremental benefit of the effort-inducing property of incentive compensation on employee effort is.

Several theories from psychology and economics suggest that incentives will increase performance by positively motivating output-based efforts. For instance, expectancy theory (see Vroom, 1964; Van Eerde and Thierry, 1996; among many others) and agency theory (see Ross, 1973; Baiman, 1982, 1990; Eisenhardt, 1989; Holmstrom, 1989; Lambert, 2001; among many others) suggest that incentives increase performance because incentives motivate individuals to exert effort. When these theories are applied in a multidimensional environment, the inference is that incentive compensation has an effort-inducing property that will increase performance. It is important, however, not to consider the effort-inducing property of incentive compensation in isolation. Specifically, directing employees' attention toward the quantity dimension, for instance, should cause employees to emphasize speed of production more than quality of production and therefore motivate employees to increase their quantity output (Forster et al., 2003), compared to when the firm emphasizes the quality dimension. Conversely, directing employees' attention toward the quality dimension should focus employees on minimizing mistakes and make the employees more vigilant with regard to the quality of each unit of output (Forster et al., 2003) compared to when the firm emphasizes the quantity dimension.

As directing employees' attention to a task dimension will increase employees' performance on that dimension, the critical question regarding the effort-inducing property is whether or not it has an incremental effect on employees' output quantity or quality beyond what is driven by directing attention to that dimension. Currently, this is an open empirical question. On the one hand, the effort-inducing property might propel employees to continue to exert effort towards that dimension beyond their motivation stemming from having their attention directed towards the quantity (quality) dimension. On the other hand, simply directing attention towards quantity (quality) may be sufficient to lead employees to reach a point where their output is maximized such that the effort-inducing property might not propel employees to increase their output (i.e., a ceiling effect). Given the lack of a clear theoretical model capable of establishing formal predictions amenable to testing, we view our study as providing empirical evidence that can be used to assist in the development of future theory and formal propositions related to incentive compensation in multidimensional settings.

We investigate the incremental effectiveness on performance of the effort-inducing property above assumed benefits of the attention-directing property by conducting an experiment whereby employees complete a multidimensional task that requires them to allocate their effort between production quantity and production quality.¹ Specifically, we examine when incentive compensation is quantity-based whether the effort-inducing property of the incentive compensation will have a positive effect on employees' output quantity, whereas when incentive compensation is quality-based whether the effort-inducing property of the incentive compensation will have a positive effect on employees' output quality.

Using an experiment allows us the opportunity to isolate the effect of the effort-inducing property on performance from the effect of the attention-directing property. This is because in practice it is extremely difficult to tease out how the attention-directing and effort-inducing properties of incentive compensation separately influence performance. In our

¹ In order for both the attention-directing and effort-inducing properties of incentive compensation to play a role a multidimensional setting must be present. In a single-dimensional setting there is no need to direct attention as it is clear where employees should focus their attention. Thus, in such settings, incentive compensation only serves an effort-inducing role. We use both a quantity and a quality dimension in our study because these dimensions are commonly observed in practice (Kim and Gershwin, 2005).

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